

1966 OPERATING SUMMARY

# **MARMORA**

***water  
treatment  
plant***

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**ONTARIO WATER RESOURCES COMMISSION**

***Division of Plant Operations***

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ONTARIO WATER RESOURCES COMMISSION

OFFICE OF THE GENERAL MANAGER

Members of the Marmora Local Advisory Committee,  
Village of Marmora.

We are pleased to submit to you the 1966 Operating Summary for the  
Marmora Water Treatment Plant, OWRC Project No. 58-W-25.

It is hoped that our joint participation in efforts to protect your water  
supply will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", written over the typed name.

D. S. Caverly,  
General Manager.



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET  
TORONTO 5

J. A. VANCE, LL.D.  
CHAIRMAN

J. H. H. ROOT, M.P.P.  
VICE-CHAIRMAN

TELEPHONE 365-

D. S. CAVERLY  
GENERAL MANAGER  
W. S. MACDONNELL  
COMMISSION SECRETARY

General Manager,  
Ontario Water Resources Commission.

I am happy to present you with the 1966 Operating Summary for the Marmora Water Treatment Plant, OWRC Project No. 58-W-25.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,  
Director,  
Division of Plant Operations.

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# **MARMORA**

## **water treatment plant**

operated for

THE VILLAGE OF MARMORA

by the

ONTARIO WATER RESOURCES COMMISSION

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VICE-CHAIRMAN: J. H. H. Root, M.P.P.

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### DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director:	C. W. Perry
Regional Supervisor:	D. A. McTavish
Operations Engineer:	J. N. Dick

801 Bay Street	Toronto 5
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## 1966 REVIEW

The Marmora Water Treatment Plant treated a record of 31.082 mg of water this year. This represents a 24 percent increase in volume over 1965.

## OPERATING COSTS

The operating expenditures for 1966 incurred by the OWRC were \$1,235.76. This is an increase of 25 percent over 1965, due to the increase in water consumption by the Village of Marmora.

The Corporation of the Village of Marmora incurred the following operating costs:

Administration	\$ 600.00
Printing and Stationery	70.38
Postage	60.00
Operator's Salary	2,299.22
Operation	290.20
Maintenance	<u>57.05</u>
	<u>\$3,376.85</u>

The total operating costs for the Marmora Water System in 1967 were \$4,612.61.

## REPAIRS and MAINTENANCE

The plant experienced very few repairs during 1966. In March of 1966, one of the pipe nipples for the chlorinator developed a leak but was repaired immediately without shutting the plant down. Some mechanical difficulty was experienced in the controls for the recirculating pump. The operator and OWRC maintenance co-ordinator repaired the controls without shutting down the filter chamber. The operation and maintenance of this plant has been very satisfactory.

## PROCESS

The operator was able to keep the colour units below 15 hazen units for most of the year. Some difficulty was experienced in maintaining the proper colour level during the early part of the year. The filtered water has remained below the OWRC standards of 5 ppm for 1966.

PROJECT COSTS

NET CAPITAL COST (Estimated)	\$212, 977. 01
DEDUCT - Payments from Municipalities	<u>425. 00</u>
Long Term Debt to OWRC	<u>\$212, 552. 01</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	\$ <u>15, 436. 44</u>
Net Operating	\$ 1, 235. 76
Debt Retirement	4, 770. 00
Reserve	1, 249. 19
Interest Charged	<u>11, 930. 55</u>
TOTAL	\$ <u>19, 185. 50</u>

RESERVE ACCOUNT

Balance at January 1, 1966	\$ 4, 894. 30
Deposited by Municipality	1, 249. 19
Interest Earned	<u>298. 90</u>
	\$ 6, 442. 39
Less Expenditures	<u>-</u>
Balance at December 31, 1966	\$ <u>6, 442. 39</u>



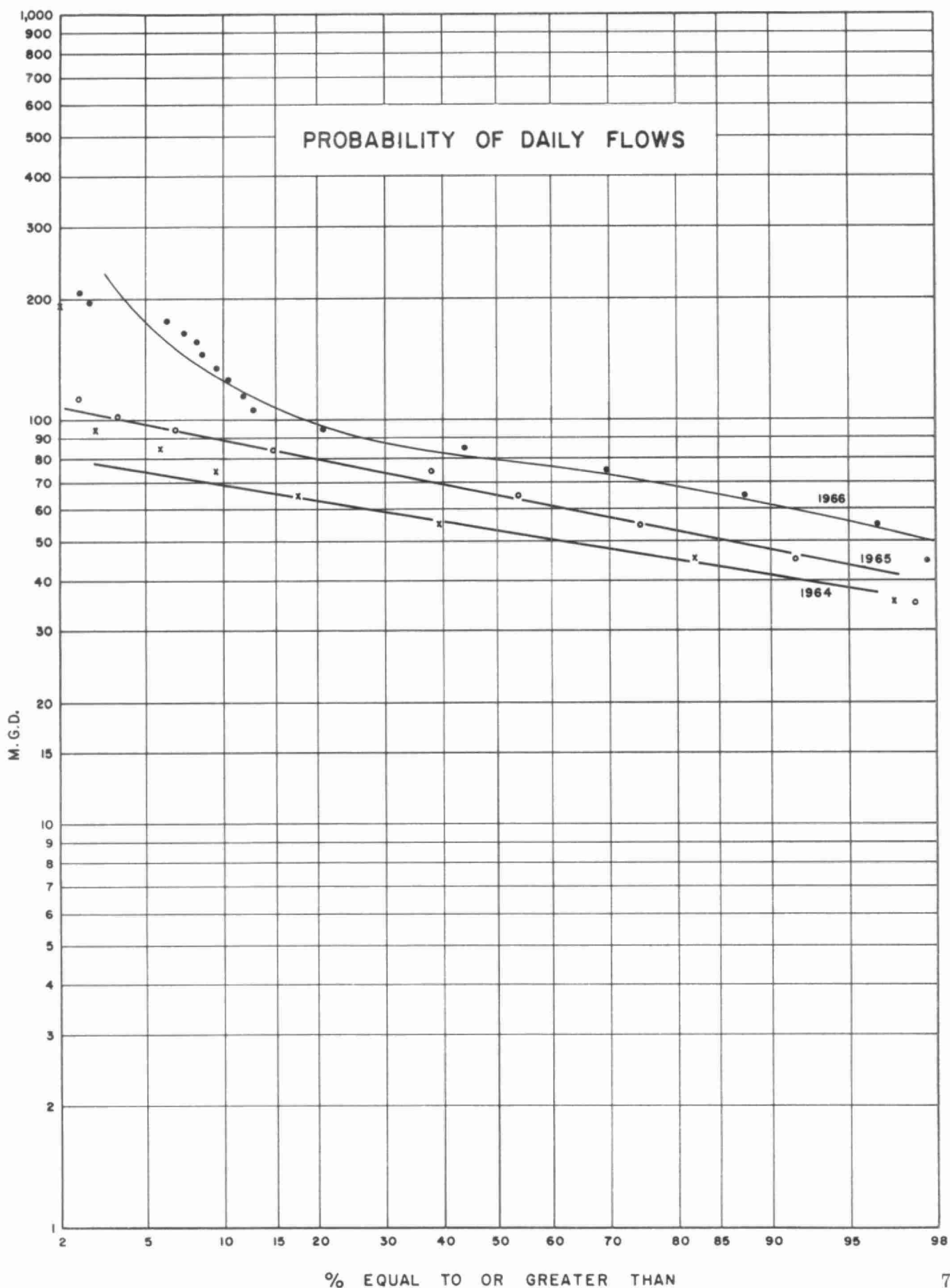
### MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	CHEMICAL	REPAIRS & MAINTENANCE	SUNDRY
JAN	130.65			130.65
FEB	1.50			1.50
MARCH	10.94		4.44	6.50
APRIL	303.70	297.20		6.50
MAY	3.86		2.36	1.50
JUNE	42.38			42.38
JULY	25.50	22.50		3.00
AUG	50.04	45.00	5.04	
SEPT	295.10	292.10		3.00
OCT	71.39			71.39
NOV	276.70	275.20		1.50
DEC	24.00	22.50		1.50
TOTAL	1235.76	954.50	11.84	269.42

### YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER THOUSAND GALLONS
1962	11.992	824	2.46	0.07
1963	16.607	937	2.81	0.06
1964	18.690	515	1.52	0.02
1965	23.713	923	2.69	0.04
1966	31.082	1236	3.90	0.04

# Process Data



#### GRAPH OF ACTIVATED CARBON USED PER WEEK

Activated carbon is used in the treatment process to reduce the colour of water. Carbon treatment was required in the months of January, February, April and November of 1966.

#### GRAPH OF AVERAGE WEEKLY COLOUR

The peak treated water colour count was 10 units and occurred in the month of February. The OWRC objective for colouring treated water is less than 15 hazen units which was maintained throughout the year.

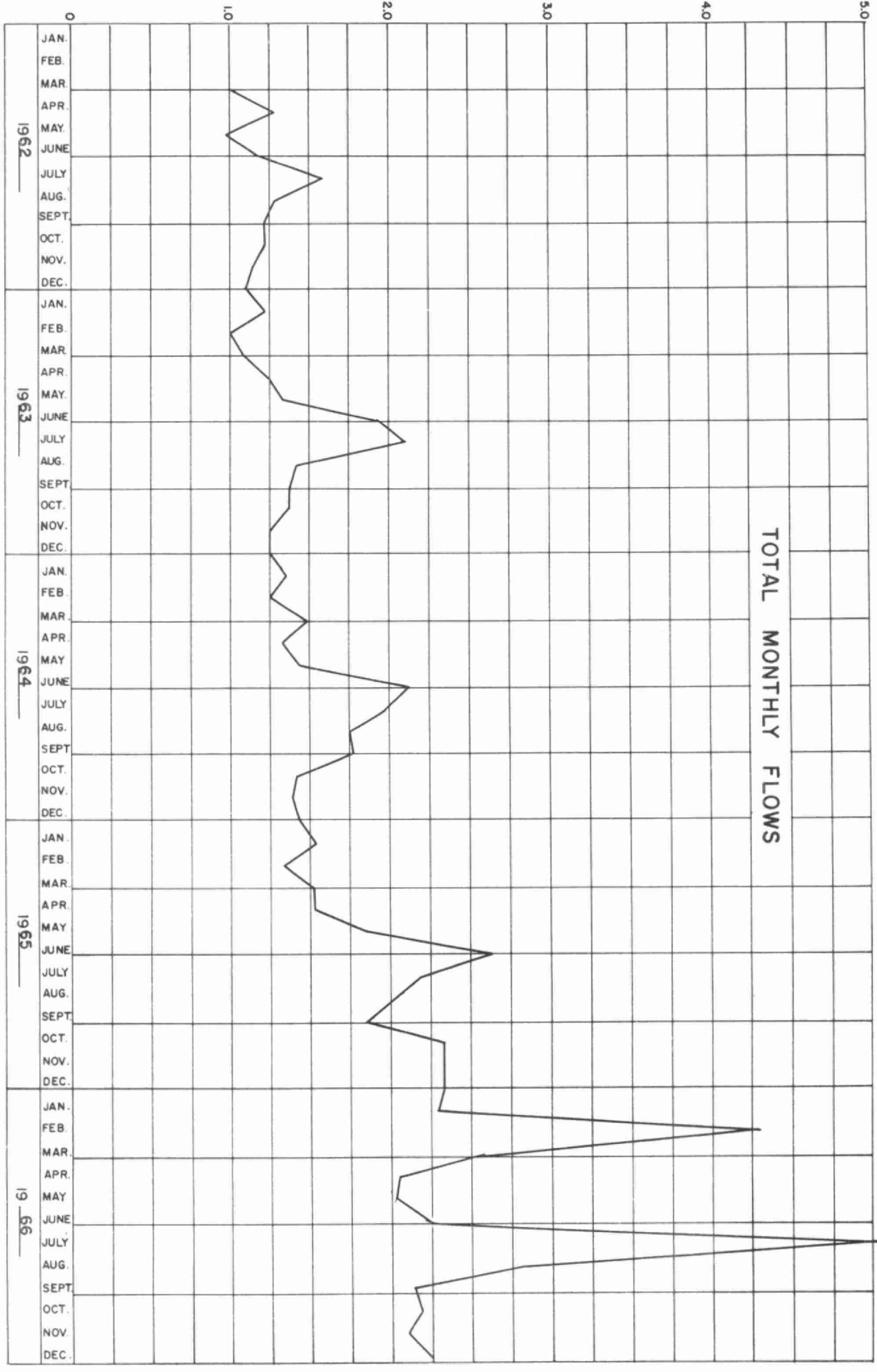
#### GRAPH OF POUNDS OF DIATOMACEOUS EARTH

Diatomaceous earth or Cellite, its trade name, is used in water treatment systems to remove turbidity in the raw water supply. From the graph, it can be seen that the greatest demand for Cellite is in July when the flows reached 5.361 mg. The summertime is also a period when there is more suspended matter and algae in the river requiring better treatment of the raw water.

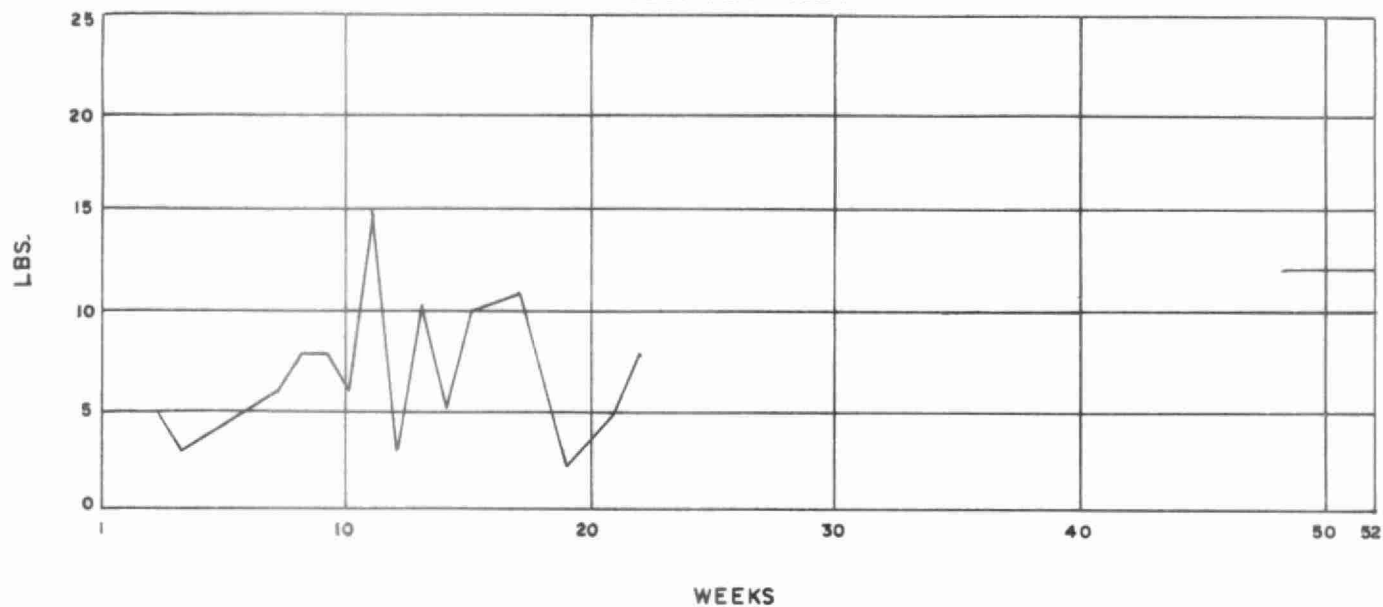
MGD

TOTAL MONTHLY FLOWS

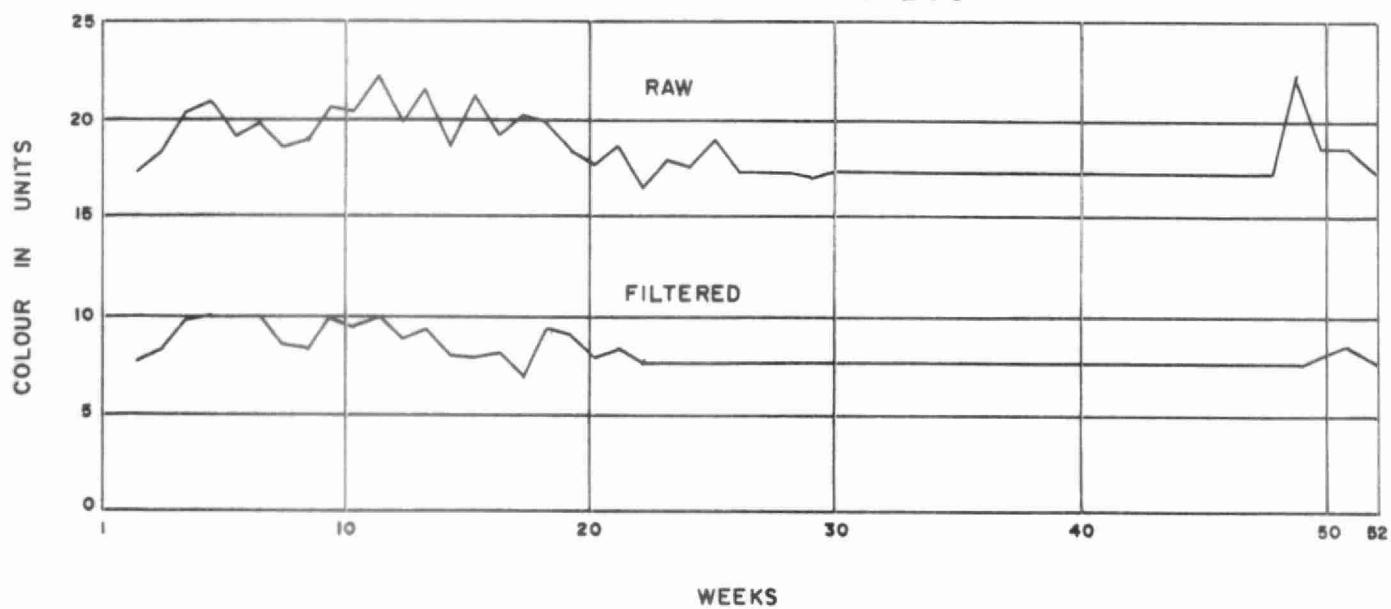
5.361

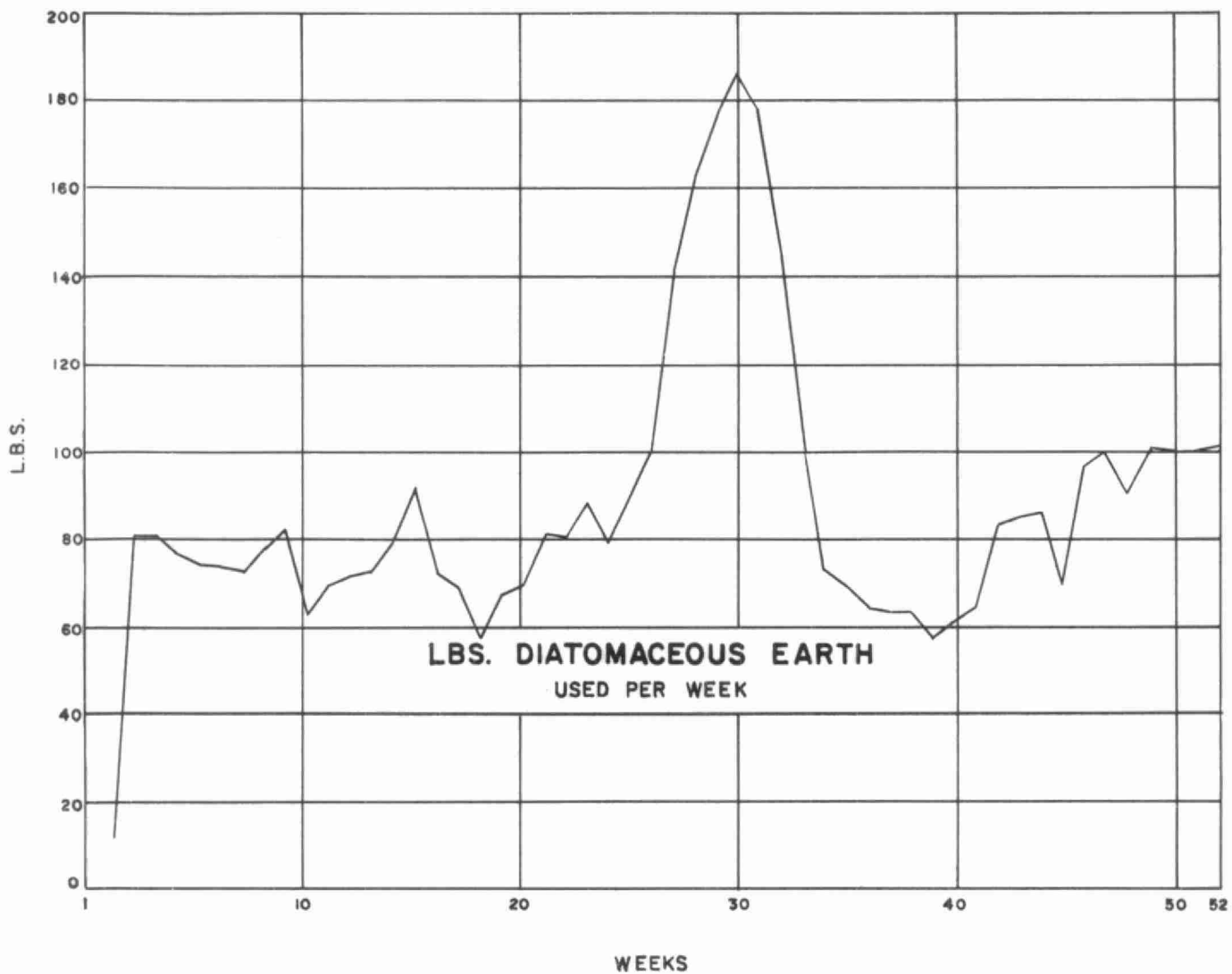


# ACTIVATED CARBON USED PER WEEK



## AVERAGE WEEKLY COLOUR





# CHEMICAL SAMPLE RESULTS

DATE	SAMPLE	HARDNESS AS CaCO3	ALKALINITY AS CaCO3	IRON AS Fe	pH AT LAB	CHLORIDE	APPARENT COLOUR UNITS	TURBIDITY
JANUARY 5	RAW						25	1.4
	FILTERED						25	1.1
MARCH 22	RAW	94	74	0.19	7.5	4	25	1.8
	FILTERED	90	71	0.21	7.4	9	20	0.2
MAY 24	RAW	90	74	0.11	7.9	3	25	1.7
	FILTERED	88	72	0.07	7.7	5	15	0.7
JULY 6	RAW						25**	1.1
	FILTERED						10	0.3
AUGUST 9	RAW	84	70	0.14	8.0	4	15	3.8
	FILTERED	84	65	0.11	7.7	6	<5	3.8
SEPTEMBER 14	RAW	88	73	0.24	8.2	4		
	FILTERED	88	72	0.04	8.3	5		
OCTOBER 12	RAW	88	76	0.09	8.0	5	15	2.0
	FILTERED	88	72	0.04	7.7	6	10	1.1
NOVEMBER 22	RAW	94	76	0.11	8.1	3	25	2.0
	FILTERED	96	74	0.09	8.0	5	10	0.5
DECEMBER 14	RAW	86	69	0.18	7.8	1	15	2.3
	FILTERED	88	66	0.11	7.7	1	5	1.7

\*\* TEST PERFORMED ON SETTLED SAMPLE

BACTI RESULTS

Date	Raw	Filter	Dist. Sys.
May 24	24	-	0
July 6	24	0	0
August 9	44	0	0
September 14	14	0	0
October 11	38	0	0
November 22	68	0	0
December 12	24	0	0



## CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	2.283	52.7	2.31
FEBRUARY	2.290	47.6	2.08
MARCH	2.573	54.1	2.10
APRIL	2.092	42.4	2.03
MAY	2.026	42.0	2.07
JUNE	2.430	81.0	3.33
JULY	5.361	135.3	2.52
AUGUST	2.826	62.5	2.21
SEPTEMBER	2.215	43.8	1.98
OCTOBER	2.329	43.1	1.85
NOVEMBER	2.199	38.2	1.74
DECEMBER	2.458	46.0	1.87
TOTAL	31.082	688.7	-
AVERAGE	2.590	57.4	2.22

## COMMENTS

The total flow of 31.082 mg of treated water was pumped to the distribution system requiring 688.7 pounds of liquid chlorine to provide a dosage rate of 2.22 ppm. The highest flow of 5.361 mg occurred in the month of July. This flow represents 70 percent of the design pumping capacity of the plant. The chlorine residual of .5 ppm is carried in the treated water to ensure satisfactory disinfection.

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